Income replacement among recent widows

Richard V. Burkhauser, Philip Giles, Dean R. Lillard, and Johannes Schwarze

Much attention has recently been focused on issues related to aging. One important question is how financially prepared a couple is for the death of one of the partners. Although not directly answering this question, this study looks at part of the issue by comparing the income of women in Canada, the United States, Great Britain and Germany before and after the death of their husbands during the 1990s.

The implications of the death of a spouse are far more wide-ranging than simply how the deceased person's earnings will be replaced. Nevertheless, it is an important issue to understand, particularly for older women. Younger generations of women are much more likely to be active in the labour market and will have higher personal incomes, whereas older generations were more dependent on a spouse. Also, women tend to live longer than men (average life expectancies were 81.2 and 75.4 in 1996) and are usually younger than their husbands—about two years at first marriage, 3.6 at remarriage after divorce, and 6.5 at remarriage after widowhood. Almost half of marriages end in widowhood that lasts over 15 years for women compared with 9 for men (Nault and Bélanger 1996). Indeed, by their late 60s, more than 1 in 5 women are widowed, and by age 75, widows outnumber married women (Statistics Canada 2004).

In some situations, a widow may feel obliged to find a job or increase her work hours by changing from part- to full-time employment. Another step may be to move in with relatives or friends. This study does not examine the factors leading to these decisions, but simply looks at how well the average widow in the 1990s fared financially after the death of her husband.

Background

Canada and other OECD countries offer an array of government programs to mitigate the effects of major earnings losses on households. Public social insurance systems provide income to a widow based on her husband's past earnings; an assortment of means-tested welfare programs are also available. Such programs typically provide a minimum social safety net for non-workers that may be either universal or targeted (for example, the elderly, disabled, lone parents, survivors).

Private institutions also play an important part in replacing lost earnings. The survivor of a deceased worker may receive payments from the fringe-benefit package offered by the employer. Furthermore, some households can generate income from accumulated wealth, the added market work of other household members, or life insurance settlements.

Researchers who investigate the economic well-being of households after a worker's death often focus on how a given program replaces lost earnings. This is particularly so in cross-national studies. Such studies attempt to measure income available to households after a worker's death. Lack of comparable data, however, often restricts cross-national studies to two types of comparison: a hypothetical average worker's earnings history and the subsequent social insurance benefits (Gruber and Wise 1999), or cross-sectional data on the economic well-being of married women and widows of a given age (Yamada and Casey 2002).[1] More sophisticated studies use synthetic cohort analysis to measure changes in a cohort's economic well-being as it ages and becomes more dominated by widows (Williamson and Smeeding 2002). Such cross-national comparisons convey only part of the story since they are unable to follow actual households.

Richard V. Burkhauser and Dean R. Lillard are with Cornell University. Johannes Schwarze is with Otto-Friedrich-Universität Bamberg. Philip Giles is with the Income Statistics Division and can be reached at (613) 951-2891 or perspectives@statcan.ca.

This study uses the Cross-National Equivalent File (CNEF), which contains comparable socio-economic information on households in Canada, Germany, Great Britain, and the United States. The CNEF permits the economic well-being of women to be traced following the death of their husbands. While the four countries differ substantially in how specific sources of income change, especially the government and private mix, the overall pattern of replacement rates is remarkably similar.

Data

The Cross-National Equivalent File (CNEF) is a longitudinal micro-database of comparably defined variables from the German Socio-Economic Panel, the United States Panel Study of Income Dynamics, the British Household Panel Study, and the Canadian Survey of Labour and Income Dynamics. The CNEF currently contains data starting from 1980 for the United States, 1984 for Germany, 1991 for Great Britain, and 1993 for Canada. It includes standard demographic information, household income and its components, and individual information on employment and earnings. The file is updated annually with additional years of the panels and newly created comparable variables.[2]

This study uses a longitudinal sample based on event history to examine the incomes of women before and after the death of a spouse. Because such a death is a relatively rare event, even at older ages in these long-running longitudinal data sets, the number of deaths among sample members is modest. The sample consists of 361 German, 216 British, 473 Canadian, and 437 United States women whose husbands died sometime during the life of the panel. To measure changes in the economic well-being of the widow's household, all sources of household income were tracked. For each country, women were pooled by the age of their husbands at death, regardless of the calendar year in which the death occurred. To avoid complication, the analysis focused on household income in the year before and after the husband's death.[3]

While income is a very useful measure, wealth and how it changed would provide even greater insight into how the economic well-being of women changed following the death of their husbands. Changes in income are included in these datasets but not changes in wealth. This is a problem especially with respect to life insurance. While the flow value from any investments purchased with life insurance payments made to a widow (for example, the interest from a life insurance payout that was put into a bank account) would be included as income in the years following death, the value of the full life insurance payment that caused the increase would not be captured. The results could be affected if the effect of life insurance settlements on the economic well-being of widows varied according to the husband's age at death or if it varied among countries. Similarly, the effect of the sale of assets to cover living expenses is not measured.

Definition of household income

Each country has a network of government programs that offset lost earnings and provide some level of income protection for non-working citizens. It is always difficult and somewhat arbitrary to equate specific programs across countries. In each of the four countries, all government cash transfer programs were dichotomized into social insurance (or social security) programs and social welfare programs. To be included in the former, a benefit has to be related to past contributions (taxes) paid. For instance, the Canada and Quebec Pension Plans (C/QPP) are financed primarily by a payroll tax, and each worker's benefit is related to past earnings. The relationship need not be actuarially fair (that is, the present discounted value of expected benefits need not equal taxes paid) but a significant relationship must exist. Second, program benefits cannot be influenced by current income—that is, the program cannot have a means test. So while Employment Insurance benefits are based on contributions, they are reduced in some situations based on overall income. On the other hand, the Old Age Security program is targeted to seniors (the group in which the majority of widows would be found), but it is universal in nature and has been changed in recent years to be means-tested.

Although difficult to define, the distinction between social insurance and social wel...re is meaningful because social insurance programs have historically

Social insurance programs

Canada	Canada and Quebec Pension Plans
Germany	Gesetzliche Rentenversicherung (mandatory retirement insurance program) and related programs
Great Britain	National Insurance Retirement Pension
United States	Old-Age Insurance, Disability Insurance, Survivors Insurance

been well-financed in all four countries, while social welfare programs have had a much more varied level of support. Furthermore, social welfare programs are usually focused on lower-income households, while social insurance programs are more evenly distributed across the income spectrum.

Household income is the sum of all income received during a calendar year by individuals residing in a single dwelling. It is measured as post-transfer, post income-tax, money income. These amounts are adjusted for inflation using the consumer price index in each country. Since the statistic of interest is the ratio of income after the spouse's death to income prior to death, the choice of conversion year is arbitrary. Another advantage of focusing on this ratio is that no conversion between monetary units is necessary.

Finally, household income is adjusted each year for the number of people in the household. Since different-sized households require different levels of income, and household size will change after a husband's death, size must be taken into account to allow proper comparisons. A large literature details the problems associated with measuring the economic well-being of individuals in households of different size (Moon and Smolensky 1977; Burkhauser, Smeeding and Merz 1996). Simply comparing a woman's household income, unadjusted for household size before and after the death of her husband, implicitly assumes perfect returns to scale in household production. Alternatively, assigning each survivor a per-capita share of net-of-tax household income, implicitly assumes no returns to scale. A formula that accommodates these two extremes is: $E = D/S^e$ where E is an individual's equivalent income, D is total household income, and S is household size (Buhmann et al. 1988).

Assumptions about economies of scale are captured in the value adopted for e. At one extreme, where $e = 1$, no economies of scale exist, and per capita income is assigned to each person in the household. At the other extreme, where $e = 0$, economies of scale are perfect, and each person is assigned equivalent income exactly equal to household income.[4] Researchers commonly set e to 0.5, so this value is adopted here.

Role of social insurance programs

A first step is to examine social insurance programs to assess how well they respond to reduced earnings following the death. Since the household may already be receiving social insurance income when the death occurs, the appropriate comparison is the sum of social insurance income and earnings of the husband in the year before death with social insurance income in the year after death. This is quite restrictive since it excludes any changes a widow decides to make, such as taking a job or moving in with adult children.

For each household, the ratio of household size-adjusted social insurance income in the calendar year after death to the sum of household size-adjusted social insurance benefits and husband's earnings in the calendar year prior to death was calculated. This ratio approximates the replacement rate concept used in simulations typically done to measure the degree to which social insurance benefits replace lost earnings.

In all four countries, social insurance benefits provided substantial protection against income loss for the median woman following the death of her husband at older ages (Table 1). The social insurance replacement rates in the 70 and older age group were very similar across countries and higher than for other ages. For women whose husbands died between 62 and 69, an age range where labour force participation of men in these countries varied considerably, the differences in replacement rates were far greater. Canada had the highest replacement rate, at 0.92; the United States had the lowest, at 0.67. The age groups were chosen in line with the U.S. social security program where 62 is an important age in determining benefits. Persons under 62 were divided into two age groups, as were those 62 and over.

In all four countries, social insurance replacement rates were much smaller for the median widow at younger ages than at older ages. The replacement rate was low for women whose husbands died at a relatively young age, largely because survivors did not automatically

Table 1: Median widow's social insurance replacement rate

	United States	Germany	Great Britain	Canada
Husband's age at death				
25 to 49	0.41	0.17	0.25	0.12
50 to 61	0.00	0.37	0.33	0.47
62 to 69	0.67	0.87	0.84	0.92
70 or older	0.93	0.92	0.88	0.86

Source: Cross-National Equivalent File, 1980-2002

receive social insurance benefits. In the United States, for example, social security benefits are provided to women whose husbands die before age 62 only if there is a dependent child. Consequently, the median U.S. widow whose husband died between age 50 and 61 received no social security benefits. (The value in the table is zero because the median widow in the sample did not have a dependent child.) In the other countries, the median widow this age found more of her late husband's labour income replaced by social insurance benefits. In Canada, the C/QPP pays survivor benefits to widows and widowers this age immediately after the death of a covered worker, based on the worker's accrued contributions. In Germany, widows and widowers under 45 receive 25% of their deceased spouse's pension (or estimated pension). Those 45 and over receive 60%. In Great Britain, widows qualify for National Insurance benefits at any age as long as the husband worked.

Household income replacement rates

As noted, the replacement rate of total post-transfer, post-tax household income (Table 2) provides a more complete understanding of how a woman's economic well-being changes in widowhood than does the social insurance benefit replacement rate.[5] In addition to the husband's dying, other changes in the composition of the widow's household are incorporated through the use of the income of all household members and an equivalence scale. Additionally, the wife may get a job or increase the number of hours at her current job.

In all four countries, the household income replacement rates were much larger than the social insurance replacement rates at younger ages, and usually larger at older ages. However, the rates in Great Britain were generally different than those observed in the other three countries—perhaps the result of fewer deaths observed in the British sample. Even more important, from a country comparison viewpoint, the range of the post-transfer, post-tax income replacement rates was much smaller at all ages than the range of the social insurance benefit replacement rates. This suggests that non-public institutions and personal networks are often important in allowing a widow to cope economically after the death of her husband.

The similarity across countries raises the question of how replacement rates are distributed at different points of the household income distribution in the year before the husband dies. (To preserve sample size, widows in each country were pooled regardless of the age of their husband at death.)

Looking at the ratio of post-transfer, post-tax household (size-adjusted) income in the year after the husband's death to the same income in the year before death shows that the fraction of widows in each category was similar across the four countries (Table 3). The median and modal replacement rate category in all four countries lay between 0.75 and 0.99. About three-quarters of women in Canada and Germany had replacement rates of 0.75 or more, while the proportion in the other two countries was somewhat less. But a non-trivial minority of women in all countries experienced larger declines in their household size-adjusted income following the death of their husbands. The United States had the highest share of widows with replacement rates in the two lowest categories. About 13% of U.S. widows experienced a decline in their household size-adjusted income of more than

Table 2: Median widow's household income replacement rate

	United States	Germany	Great Britain	Canada
Husband's age at death				
25 to 49	0.87	0.80	0.97	0.82
50 to 61	0.83	0.83	1.04	0.75
62 to 69	0.89	0.95	0.92	0.94
70 or older	0.94	0.95	0.76	0.96

Source: Cross-National Equivalent File, 1980-2002

Table 3: Distribution of household income replacement rate

	United States	Germany	Great Britain	Canada
	% of widows			
Total	**100.0**	**100.0**	**100.0**	**100.0**
Less than 0.50	12.8	8.0	7.9	7.6
0.50 to less than 0.75	20.3	17.5	25.0	17.6
0.75 to less than 1.00	27.6	35.5	35.7	36.7
1.00 to less than 1.25	17.4	23.6	14.4	21.0
1.25 to less than 1.50	6.7	8.9	7.4	8.0
1.50 or more	15.3	6.7	9.7	9.2

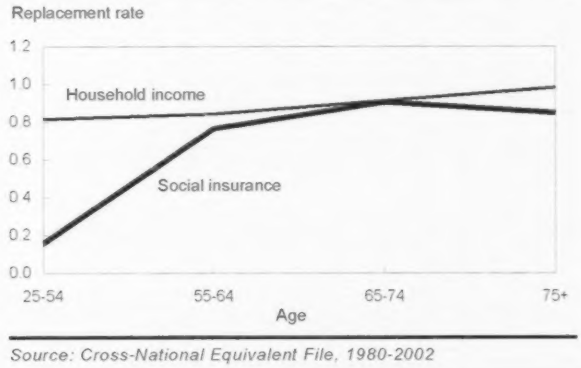
Source: Cross-National Equivalent File, 1980-2002

one-half. This fraction is over 60% higher than in the other three countries. On the other hand, a relatively high percentage of widows had replacement rates of 1.50 or more.

As mentioned, the choice of age groups was dictated primarily according to programs in the United States. To see the effect of this choice on Canadian data, the replacement rates were regenerated with different age groupings (Chart). The C/QPP was designed for principal benefits to start at age 65, so this age was key. Again, four age groups were defined. Overall, the results were quite similar for the two sets of age groups. The social insurance replacement rates for the 55-to-64 and 50-to-61 age groups were quite different, but in the expected direction. In general, at these ages, the higher the age, the higher the replacement rate, likely reflecting the higher level of C/QPP contributions of those dying at older ages. The same phenomenon was observed for household income replacement rates, although the differences were not as dramatic.

To further investigate the economic situation of women in the lower end of the income distribution, it is important to see where they stood prior to the husband's death (Table 4). The lowest quintile of women had replacement rates far in excess of 100%. Somewhat surprisingly and encouragingly, the mean replacement rate ranged from 1.30 in Germany to 1.54 in Canada. Mean replacement rates tended to fall at higher income quintiles, with little difference in within-quintile replacement rates across the four countries. Women in the highest income quintiles prior to the husband's death experienced a greater fall in relative income.

Chart: Canadian replacement rates by age group



Source: Cross-National Equivalent File, 1980-2002

Table 4: Mean household size-adjusted income replacement rates, by income quintile the year before husband's death

	Mean replacement rate	Replacement rate less than 0.50
Lowest quintile		% of widows
United States	1.48	2.1
Germany	1.30	5.9
Great Britain	1.45	2.6
Canada	1.54	8.5
Second quintile		
United States	1.10	11.6
Germany	1.03	7.8
Great Britain	0.98	2.2
Canada	0.97	3.6
Third quintile		
United States	0.92	11.3
Germany	0.89	7.8
Great Britain	0.87	10.3
Canada	0.94	2.6
Fourth quintile		
United States	0.82	19.5
Germany	0.88	2.9
Great Britain	0.83	4.4
Canada	0.95	4.0
Highest quintile		
United States	0.75	18.7
Germany	0.82	15.5
Great Britain	0.77	19.2
Canada	0.78	19.0

Source: Cross-National Equivalent File, 1980-2002

The last column in Table 4 provides one final look at the distribution of replacement rate outcomes across income quintiles. It shows the within-quintile proportion of widows with a low replacement rate across the four countries. Sample sizes are relatively small, but results suggest that few dramatic drops in replacement rates occur within the lower income quintiles. It is among women whose pre-death household income places them in the higher quintiles that sharp declines are more likely. Hence, while the overall replacement rates for women in the year following the death of their husband's varied across countries, the bulk of the dramatic drops in replacement rates came from women in households in higher income quintiles.

Conclusion

The median woman's social insurance replacement rate was uniformly high when her husband died at 70 or over in all four countries, more varied when he died in

his 60s, and much lower when he died at a younger age. However, this variation across age and country was reduced substantially once a broader household size-adjusted income replacement rate measure was used. While the median woman still experienced a greater decline in economic well-being if her husband died at a younger age, the difference was much smaller than implied by social insurance replacement rates, as was the difference across countries. The country difference in household size-adjusted income was even smaller at older ages. Thus, across countries and across widows whose husbands died at different ages, the economic loss measured by total household size-adjusted income was much less, and much less varied, than the loss implied by social insurance replacement rates or household income replacement rates unadjusted by household size.

Measures of replacement rates such as the mean or median can obscure substantial differences in the distribution of replacement outcomes. The distribution was wider in the United States than in other countries, and with the exception of the lowest quintile, United States women were more likely than widows in other countries to experience a greater than 50% decline in their household size-adjusted income following their husband's death. However, the mean replacement rates in all four countries for widows in the lower end of the distribution was much greater than 100%; in other words, the size-adjusted household income was much higher for those with the lowest incomes prior to the husband's death. Large declines in replacement rates were more likely to be experienced by women in the upper end of the distribution. Across countries with widely different mixes of public and private support for widows, the economic well-being of women from the lowest quintile of their pre-widowhood household income distribution was almost the same in all four countries.

These results reflect the financial situation of widows in the year after their husband's death; over the longer term, their situation could be quite different.

Perspectives

Notes

1 See also other studies using cross-sectional data from the Luxembourg Income Study. Internet: www.lisproject.org/publications/wpapersentire.htm.

2 For a fuller discussion of these data, see Burkhauser et al. (2001).

3 The years used are 1970 to 1997 for the United States, 1984 to 2000 for Germany, 1991 to 2000 for Great Britain, and 1993 to 2000 for Canada. While the use of different time periods may affect comparisons between countries, the use of the data is of a 'short enough' duration for any particular widow that external social and economic factors would not be significant. Whether the results hold in the long run is another issue.

4 Burkhauser, Smeeding and Merz (1996) show the sensitivity of income inequality and poverty measures to variations in the value of e but recognize that economic theory does not suggest a particular value.

5 An intermediate step could have been to look at the replacement of social insurance and social welfare programs together. However, since the replacement of household income in its entirety is viewed as preferable, this intermediate step was not carried out.

References

Buhmann, Brigitte, Lee Rainwater, Guenther Schmaus, and Timothy M. Smeeding. 1988. "Equivalence scales, well-being, inequality, and poverty: Sensitivity of estimates across ten countries using the Luxembourg Income Study (LIS) database." *Review of Income and Wealth* 34, no. 2 (June): 115-142.

Burkhauser, Richard V., Barbara A. Butrica, Mary C. Daly, and Dean R. Lillard. 2001. "The cross-national equivalent file: A product of comparative research." In *Soziale Sicherung In Einer Dynamischen Gesellschaft*, edited by Irene Becker, Notburga Ott, and Gabriele Rolf. Frankfurt: Campus. pp. 354-376.

Burkhauser, Richard V., Timothy M. Smeeding, and Joachim Merz. 1996. "Relative inequality and poverty in Germany and the United States using alternative equivalence scales." *Review of Income and Wealth* 42, no. 4 (December): 381-400.

Gruber, Jonathan and David A. Wise. 1999. *Social security and retirement around the world*. Chicago: University of Chicago Press.

Moon, Marilyn and Eugene Smolensky (eds.) 1977. *Improving measures of economic well-being*. Institute for Research on Poverty monograph series. New York: Academic Press.

Nault, François and Alain Bélanger. 1996. *The decline in marriage in Canada, 1981 to 1991*. Statistics Canada catalogue no. 84-536-XPB. Ottawa.

Statistics Canada. 2004. *Annual demographic statistics, 2003*. Catalogue no. 91-213-XIB. Ottawa.

Williamson, James and Timothy Smeeding. 2002. *Sliding into poverty? Cross-national patterns of income change and benefit decay in old age*. Future working paper of the Syracuse University Center for Policy Research. Available through Philip Giles.

Yamada, Atsuhiro and Bernard Casey. 2002. *Getting older, getting poorer? A study of the earnings, pensions, assets, and living arrangements of older people in nine countries*. Luxembourg Income Study working paper no. 314. Internet:www.lisproject.org/publications/wpapersentire.htm.